Snow & Ice Control Plan

November 2022

MARYSVILLE
PUBLIC WORKS

(360) 363-8100

Public Works
80 Columbia Avenue
Marysville, WA 98270

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Introduction

The City of Marysville's Public Works Department is responsible for safe and efficient operation and maintenance of the transportation network and city-owned properties. The purpose of this Snow and Ice Control Plan is to provide effective, clear, consistent and environmentally responsible guidelines and procedures, resulting in the best possible service to the City's constituents. During snow and ice events, the administration and coordination of crews is especially critical to ensure that emergency situations will be responded to in an efficient, effective and timely manner.

The City's topography is diverse and creates a variety of situations during winter weather. Public Works annually re-evaluates equipment, crews and response to address this variety. Some winters bring heavy snowfall and other years see no snow accumulation at all. In any city, snow removal is complicated by factors such as parked cars, pedestrians and narrow streets.

The City's primary goal is to provide passable routes for emergency vehicles, school buses, public transportation, commercial vehicles, travelers, and visitors to City facilities during conditions of snow, ice or severe frost on the City's priority arterials, collectors, and known steep or curved street locations. The following bullets describe the goals of this Snow and Ice Control Plan to meet the primary goal.

- Establish the City's typical methods, materials, and procedures for snow/ice control.
- To plan and manage financial and staff resources during snow/ice events.
- Provide clear direction to Public Works staff and the public and a clear understanding of City and private constituent responsibilities.
- To inform the public about what to expect during snow and ice events, including priorities and updates before, during, and after snow/ice events.

The following sections describe the City of Marysville's preparations and planned response when snow and ice events occur.

Preparing for Snow & Ice Events

Preparation for snow and ice events occurs through most of each year. The following sections summarize typical annual schedules, staffing, materials, equipment, training, and weather monitoring to prepare for events. Finally, a summary of the methods used to document and review snow and ice event response, and any resulting updates to this plan or related procedures is provided.

Preparation Schedule

September	Any equipment procurement or repairs are completed. Material purchases are completed and spray trucks are purged of chemicals used for vegetation control during summer months.
	Begin drafting winter storm preparation materials for public outreach (snow/ice routes, roles, property owner responsibilities, etc.).
October	Participating in Snohomish County's Winter Weather Summit and Washington State Department of Transportation's (WSDOT's) Everett Maintenance office regional coordinating events. Weather and temperatures are more closely monitored; anti-ice treatment typically begins as colder conditions warrant. Staff shift schedules for snow and ice events are drafted. Internal training curriculum is finalized
	Winter storm preparation material finalize for public outreach.
November	Annual kickoff meetings are held to discuss weather preparedness, nature of anticipated winter predictions (such as "Neutral", "El Nino," or "La Nina"). Internal training is conducted. Equipment is prepared including any necessary calibrations and materials are stockpiled for use.
	Publish and share winter storm preparation materials for public outreach.
December through March	Most inclement weather occurs during this timeframe. Crews perform event response activities, such as anti-icing, plowing, sweeping, cleaning of enclosed drainage systems, and other events. A storm response summary is completed for each event.
April	April is typically a transition month, winding down from winter weather response mode. Equipment is returned to non-winter status (cleaned & stored) and inspected for repair or replacement.
April through June	Review performance of any snow/ice events and propose changes to plans, procedures, equipment, and/or materials. Staff begins and completes priority route modification process based on this performance review, review of snow/ice related collision history, and any community input. Any equipment or material needs are identified and procurement is started.

In addition to the City's preparation for snow and ice events, the City also provides public outreach with recommended steps and obligations that members of the public may perform during events (see *Public Outreach Before Events,* page 8).

General Information

Administration and coordination of crews during snow and ice conditions is primarily conducted by Public Works staff from its facilities at 80 Columbia Avenue. From this location, Streets Maintenance crews provide 24 hour, 7 days per week snow and ice control activities. Parks Maintenance crews also operate out of this site in order to carry out their responsibilities during snow and ice events. See "Monitoring & Response, page 11 for further details. Other departments such as Police and Executive, operate from the Marysville Civic Campus and coordinate with Public Works staff as needed.

The Emergency Operations Center (EOC) is activated during declared City emergencies, the 80 Columbia Avenue site will still function as the focal point for direct coordination of crew activities; however, priorities for snow and ice control efforts or other emergency conditions by all crews will be as directed from the EOC at the Sunnyside Treatment Plan.

Staff Organization

Effective management and accomplishment of snow and ice control objectives must be accomplished through an integrated and coordinated effort by Public Works and their respective Managers, Supervisors, Lead staff and crews.

- *Streets Maintenance*
  Streets Maintenance Division staff are primarily responsible for snow and ice control activities within the public right-of-ways (e.g. streets and bridges) and at staging yards (sand, anti/de-icing, etc.). They are also responsible for setup of plow vehicles including attaching plows and sand/salt spreaders. Approximately 13 staff positions require CDL licenses and are available to drive dump trucks with plows and sand/salt spreaders. Non-CDL Streets staff assist with loading sand/salt into plow vehicles and may operate flatbed plow and anti-ice vehicles. They also may support Parks Maintenance responsibilities when needed.

- *Parks Maintenance*
  Parks Maintenance Division staff are responsible for snow and ice control at City buildings and park facilities (pedestrian paths).

- *Fleet*
  Fleet Division staff are responsible for the maintenance and repair of vehicles and equipment including during snow and ice events. Fleet staff are responsible for responding to any equipment repair needs during snow and ice events. 5 fleet staff support snow and ice equipment preparation and are available to support event response.

- *Solid Waste*
  Solid Waste staff typically perform their regular work during most snow and ice events. This Division has a separate plan for when significant events occur that identifies their modified operations. Under some conditions, most of these staff may be unable to perform regular collection service and may be available to supplement Streets Maintenance staff.

- *Other Public Works Staff*
  A total of approximately 55 Public Works staff positions across all Divisions (including Streets and Parks Maintenance) are required to possess a Commercial Driver's License to perform their regular work. On a volunteer basis, all of these staff are encouraged to attend the annual trainings to prepare to support snow and ice control.

- *Public Works Administration*
  Administrative Management staff include the Public Works Director, Assistant Public Works Director/City Engineer, Parks Director, Transportation & Parks Maintenance Manager, and Public Works Services Manager. These staff coordinate public communications, assist with decision making, and assist staff scheduling. The Transportation & Parks Maintenance Manager and Parks Maintenance Supervisor also may rotate to provide Supervisor support during extended multi-day event responses (i.e. greater than 3 days after first snowfall).

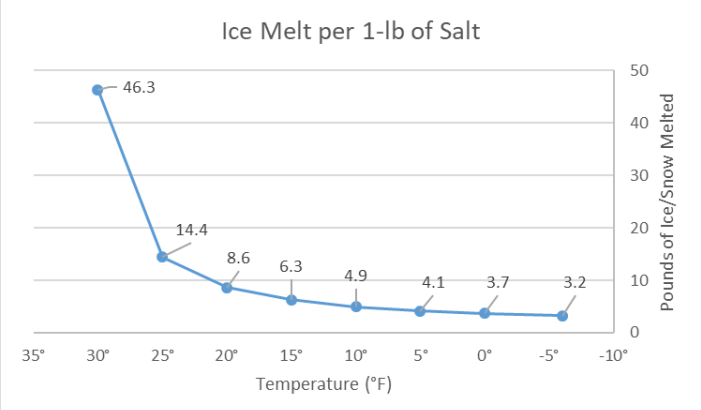
- *Executive*
  Executive Department staff include the Mayor, Chief Administrative Officer, and Communications Officer. Executive staff direct and perform public communications related to events including seasonal preparations, during events, and community feedback. They also may direct priority and performance modifications during events (see planned Response Priorities, page 10).

- *Emergency Response*
  Police and Fire Departments separately have snow response plans to maximize their ability to operate during winter weather conditions. Public Works staff response supporting emergency response operations during snow and ice events is described later.

Materials

Three types of materials are typically used by staff when responding to snow and ice events: anti- or de-icing liquids, salt, and sand. A list of typical material suppliers is provided in Appendix A.

Anti-icing materials are used before ice forms or snow begins falling to reduce the likelihood they stick to the pavement surface. **De-icing** materials are used after ice or snow begin to assist removing any accumulated ice or snow. The City uses a liquid calcium chloride ($CaCl_2$) solution for anti-icing on streets before forecast ice or snow events and uses sodium chloride (NaCl) salt at buildings and parks. Liquid anti-icing should typically not be applied until pavement temperatures are at 38°F and continuing to decrease. This avoids creating a slippery surface. Liquid anti-icing is typically effective up to 2 or 3 days but its effectiveness depends on rainfall before or during application. Sodium chloride (NaCl) salt is mixed with sand to provide both de-icing (melting) and temporary traction when ice or snow accumulate on streets. Sand is used as an abrasive and provides only *temporary* traction improvement.



It is important to note that sodium chloride (NaCl) salt's effectiveness rapidly degrades between 30°F to 25°F in either liquid solution or solid. At 25°, more than three times as much salt is needed to melt the same quantity of ice than at 30°. At 20° more than five times as much salt is needed than at 30°. Use of salt below 25° is not recommended. Research has shown salt is ineffective below 15°. During conditions at or below 25°, sand without salt will be used on hills and at major street intersections to temporarily improve traction until salt can be effectively applied.

Vehicles & Equipment

The Streets Division has a total of 9 vehicles with equipment used during snow and ice events.

- Five (5) 10-yard dump trucks with sand/salt spreaders and front plow blades
- One (1) 5-yard dump truck with sand/salt spreader and front plow blade
- One (1) F-550 flatbed truck with sand/salt spreader and front plow blade
    - Used for city facility and parks site plowing, and for high maneuverability streets (traffic circles, curb extensions, etc.)
- Two (2) 300 gallon liquid anti-ice applicator tanks installed on two (2) flatbed pickup trucks
    - Used for both ice-only and snow/ice events

In addition to the above vehicles, front-loaders are used by Public Works staff to load sand and salt into plow vehicles; only one is typically necessary during events and a second one available. The Parks Maintenance Division uses hand tools such as push spreaders to spread salt and sand, and snow shovels to remove accumulated snow at City buildings and parks.

Training

All Streets Maintenance Division staff whose positions required a Commercial Driver's License (CDL) attend an annual internal staff snow plow operator training session in November. This training typically covers the following spreading and plowing procedures and policies:

- Attaching plow blades & sand/salt dispensers to trucks
- Installing snow chains to trucks
- Plow blade controls & operation
- Typical depositing locations for snow (side or road/center, stockpile, etc.)
- Material uses, recording procedures, pre-trip and post-trip, equipment adjustments
- Review of priority routes, staffing plan, and radio communication procedures

In addition to Streets staff, a snow plow operator call-out (overtime) sign up list is posted annually before each winter weather season and these volunteers also receive this training. Finally, other non-Streets division staff who possess a CDL are encouraged to also attend this training to prepare to potentially volunteer when extended snow events occur even if they do not volunteer for the snow plow call-out list. This training is provided during regular working hours to encourage attendance.

All Streets Division staff, including non-CDL staff, receive on the job training for anti-icing liquid spreading. This training typically covers the following spreading procedures:

- Loading and operating the anti-icing applicator tank system
- Priority Routes
- Application procedures
- Documentation and recording
- Safety Data Sheets for the materials used

The Streets Division Supervisor and Lead staff annually attend regional conferences, trainings, and/or meetings typically provided by WSDOT and Snohomish County. These industry events present and discuss current strategies used throughout the region for equipment, materials, research and management used to respond to snow and ice events. In addition, published resources by Clear Roads,[1] the Pacific Northwest Snowfighters,[2] the American Public Works Association, and others are reviewed and monitored by Supervisor and Manager staff. These efforts inform this plan and its regular review and modification to meet the City's ice and snow event response needs.

[1] A Federal Highways Administration cooperative research by 36 state departments of transportation, including the Washington State DOT.

[2] A cooperative of Washington, Idaho, Oregon,

Monitoring

Public Works Streets Division Supervisor and Lead staff monitor conditions and weather reports actively from October through March.

- Weather conditions are monitored through publicly available weather services for temperatures 34°F and lower.
- These staff are also expected to register their work email and work cell phone for Snohomish County's *SnoCoAlerts* system.
- A forecasting tool developed with the University of Washington called SNOWWATCH[3] is used to learn how a storm will most likely affect different neighborhoods. This information helps determine priorities for clearing roads.

A snow or ice response will occur when temperatures are forecast to fall below 34°F with 30 percent or greater certainty (when probabilities are published/available). Management, supervisor, and crew lead staff coordinate to review forecast conditions and determine what response will occur.

Public Outreach Before Events

A winter weather outreach effort is planned for each November. This may include a press release, social media posts, and/or newsletter articles as coordinated with the Communications office. Typical snow and ice control subjects presented include:

- Recommendation to minimize travel during events
- Avoiding on-street vehicle parking on priority plow routes and anti-icing locations
    - A description of where plowed snow is deposited may be helpful.
- Highlighting any required private party sidewalk snow removal and recommended storage location (i.e. off-street and off-sidewalk)
    - Potential encouragement to assist neighbors who may have difficulties.
- How to report any damages apparently caused by City snow and ice control operations

In addition, general winter weather preparation suggestions might also be shared regarding freezing pipes, in-door heaters, and salt or brine for snow/ice melting.

Event Log, Response Summary, & Plan/Procedures Updates

A log of weather events when temperatures were forecast to fall below 34°F is kept to document their occurrence and if any operational response occurred. A log entry should be made even when a forecast event does not end up occurring. An event log template for each winter weather season is provided as Appendix B.

A separate summary of each forecast event that resulted in an operational response is prepared by the Transportation & Parks Maintenance Manager with support from all other staff. This summary should be completed within fourteen days after the end of any response

[3] https://a.atmos.washington.edu/SNOWWATCH/

operations. It also should identify any recommended immediate or short-term operational changes as well as any recommended updates to this Snow & Ice Control Plan. An event summary report template is provided as Appendix C.

Responding to Snow & Ice Events

The following sections describe how snow and ice events are responded to.

Response Priorities

Streets Maintenance staff's first response occurs at 80 Columbia Avenue to ensure response operations can occur. Following this, ice and snow event response priorities for streets are identified in the most recent version of the Snow Routes Priority Map published on the City's website (see Appendix D). This map is reviewed and any modifications made annually based on any staff and constituent input received following each snow and ice season, as well as annual review of snow/ice event dates and police-reported collision records. Vehicle owners are encouraged through public outreach publication and social media postings to avoid on-street parking along priority plow routes since plows deposit snow along the edge of travel lanes.

City buildings and parks serving Police services are the top priority (#1) for response by Parks Maintenance staff. Fire response staff are responsible for controlling snow and ice at their sites with Public Works resources available to ensure fire response operations if needed. The following list is served after Police sites:

2. Marysville Civic Campus (501 Delta Ave)
3. Community Center (1015 State Ave.)
4. Building structures at Regional & Community Parks
    a. Comeford (514 Delta Ave.)
    b. Jennings Memorial (6915 Armar Road)
    c. Jennings Nature (5315 64th Street NE)
    d. Ebey Waterfront (1404 1st Street)
    e. Strawberry Fields Athletic Park (6100 152nd Street NE)
5. Trails
6. Remaining developed parks with restrooms

Building structures at all remaining developed parks without any buildings (e.g. no restrooms) are not planned for snow or ice response, but may be serviced at the Public Works Director's discretion during regular working hours.

Public Outreach During Events

Once a response to a forecast event is initiated, Public Works Supervisor or Management staff are responsible for communicating daily or 12-hour updates to the Mayor, CAO and Communication's staff. Communication's staff are responsible for determining the appropriate information and means of public outreach communications during snow and ice events. Updates prepared by Public Works staff should:

- Identify the beginning of any event response (i.e. once decided)
- Any changes to the type of response
    - e.g. changing from anti-ice liquids to plow/sand/salt, or changing from 24 to 18-hour daily operation during longer/extended events

- Identify anticipated response activities for the following 2 days or the anticipated end date of event response
- Identify any staffing, equipment, or material supply issues

The final update should identify all likely post-event operations resulting from the event. This typically includes street sweeping and stormwater system cleaning but may include others.

Communications & Dispatching

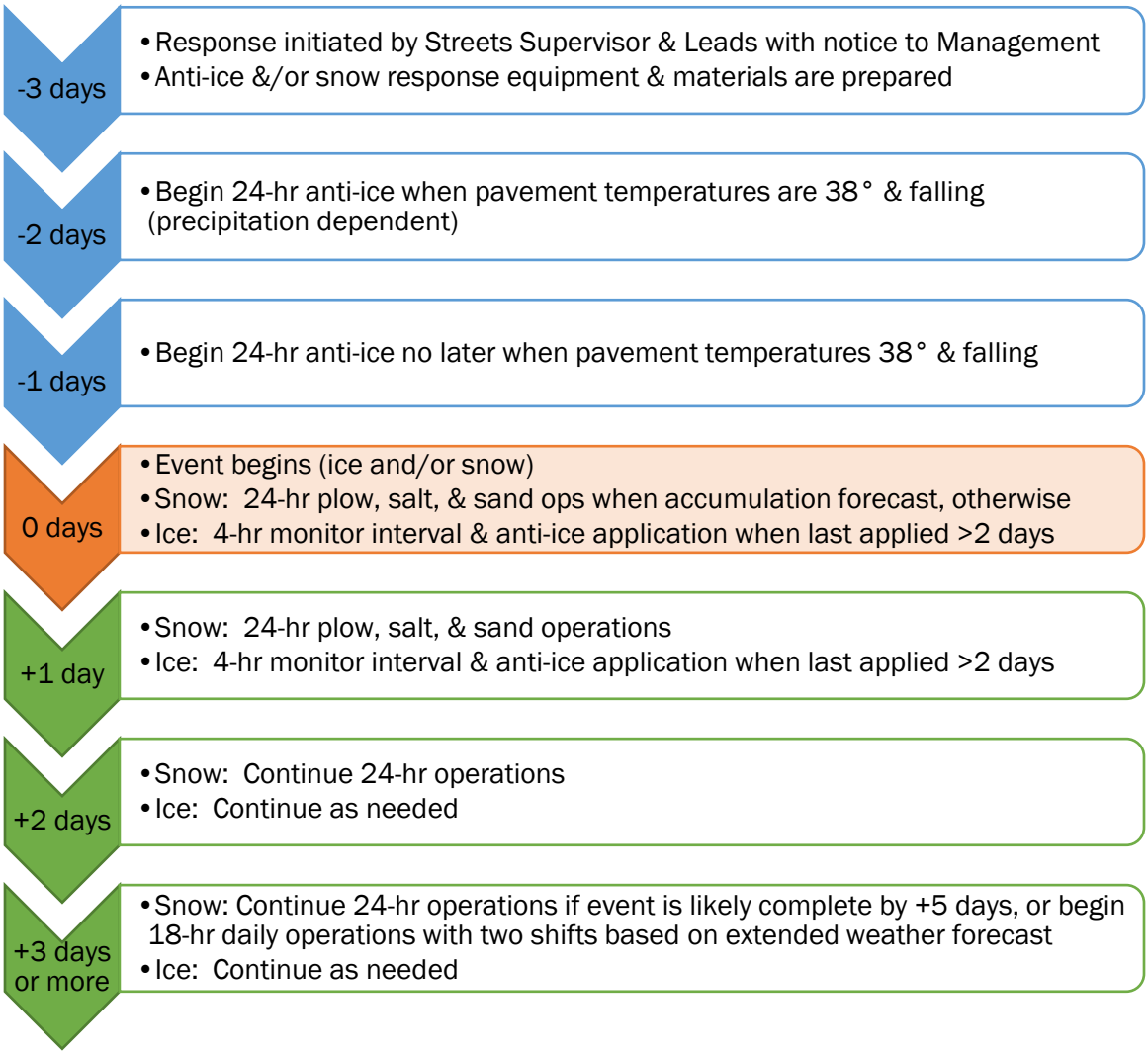
Public Works crew members begin each regular work day meeting to assign tasks and review any issues that arise. Streets Supervisor and Lead staff regularly discuss any winter weather when they are forecast. This reduces the likelihood of challenges mobilizing and scheduling staff before and during event response. Any last minute changes to methods of communication (primarily phone numbers) or staff's likely availability within continuous 24-hour operations are reviewed and discussed.

During anti-ice event response, typical mobile phone communications are used for any needed coordination. When snowfall is forecast, Streets staff performing 24-hour anti-ice operations contact the Street Supervisor or Leads should snowfall occur earlier than forecast. Radio dispatch and communications are used for coordination during plowing and sand/salt operations to ensure all staff are aware of all communications and operational activity.

Email communications are not used by staff except for summaries to Managers and for daily summaries previously described (see *Public Outreach During Events* page 10) and coordination with outside agencies such as Community Transit, and Marysville, Lakewood, and Lake Stevens Schools Districts. Verbal communication are generally required for more efficient and fast communication.

Monitoring & Response

The following outline describes the procedure for responding to each snow or ice event and defines the city's snow and ice control performance goal. **This process begins when an air temperature of 34°F is forecast.** Response activities are led by Streets Maintenance Division staff who coordinate with other Departments and Divisions who independently perform their responses. Other Departments and Divisions typically respond during regular working hours but will respond during off-days (i.e. weekend days and holidays) during events.



At any time following the beginning of an event, operations outside of regular working hours may end or be modified to 4-hour anti-ice monitoring and response. This will only occur if bare and wet conditions are achieved at the designated priorities (see *Response Priorities,* page 10) and when no further snowfall is forecast within 3 days.

Materials on hand are inventoried following the end of each event until the end of March. Should any material quantity be 15 percent below its pre-event quantity, the used quantities will be replaced as early as available.

Personnel Scheduling

Both crew, Lead, and Supervisor responding staff should typically:

- Work no more than 12 hours in any 24-hour period, and
- Work no more than 60 hours, and not work at least one continuous 24-hour period over 7 days.

These typical periods may be extended up to the following maximums if real-time event staff scheduling is needed to satisfy the above performance:

- Work no more than 16 hours in any 24-hour period, and
- Work no more than 70 hours and not work at least one continuous 34-hour period over 8 days.

A Streets Supervisor or Lead shall be working during all event response operations. The Transportation & Parks Maintenance Manager and/or other Divisions Supervisor staff (e.g. Parks Maintenance Supervisor) may perform the Streets Supervisor role during events to satisfy the above criteria and are expected to do so during extended events.

Event Summaries

The Transportation & Parks Maintenance Manager or Streets Supervisor are responsible for preparing a summary report after each ice or snow event when staff and equipment responded to weather conditions. A template is provided in Appendix C.

Materials, Equipment, & Methods Not Currently Used

There are various types of materials, equipment, and anti and di-icing methods that are not currently used by the city. These have been identified as either high or low priority for consideration or testing in current and future events, and those that are unlikely or not recommended for use.

High Priority

Adding a Material Staging Site

$100,000 to $150,000 estimated

Only one site (80 Columbian Avenue) is currently used to store all materials use for snow/ice control and is located in the southernmost area of the City. This results in greater response times for northern areas. Construction of a storage dome located on 39th Avenue W north of 156th Street SE for sand/salt mix is planned for 2023 to significantly improve response time.

Vehicle-mounted Pavement Temperature Sensors

~$1,500 estimated for a sensor on each anti-ice truck; 2 trucks

Accurate sensors are used to ensure appropriate use of anti-icing materials. Vehicle-mounting would allow continuous monitoring and application of anti-icing materials. Staff currently use consumer-grade handheld infrared thermometers that require regular stopping during anti-icing operations.

Pre-Wetting

~$15,000 estimated for pre-wetting assembly per plow truck; 6 trucks

Spraying liquid de-icing solutions onto salt and/or sand as it is spread to slightly adhere these to snow or ice surface. Other agencies have observed this may reduce the quantity and frequency of applying the materials by up to 30%.

Low Priority

Material Application Controllers

~$10,000 estimated for computerized controllers per plow & anti-icing truck; 9 trucks

Current devices used to control how much and when material is applied are a basic on/off switch for anti-icing and mechanical switches/dials. More advance computerized controllers that can automatically activate and adjust material application rates based on vehicle speeds, temperatures, and other criteria are available. This is a potential upgrade request as trucks are replaced.

Liquid De-icing

Direct application of liquid anti/de-icing solutions to compacted snow and ice are not currently used to aid removal. Deicing is recommended only on thin layers of snow/ice if an event is tapering off and strong sunlight is likely for at least several hours to dry out streets. There is otherwise a substantial risk of refreezing the diluted liquid. Testing of liquid de-icing

at one (1) low-risk anti-icing location on the priority map may occur if road and weather conditions occur.

Vehicle tracking & service mapping

Fleet vehicle tracking and routing hardware and software can provide more efficient and real-time snow/ice response route modifications. The City has begun testing a platform on solid waste vehicles with these capabilities for snow plow vehicles. These types of systems may provide public outreach capabilities that summarize real-time snow/ice response service during events. Event response performance may be incrementally improved while public outreach and addressing real-time constituent concerns may be reduced.

In-pavement temperature sensors

Installation of temperature sensors within roadway pavement as part of other capital projects can aid deciding to initiate anti-ice response. This is not widely used by most local agencies but is by larger municipalities and the WSDOT. Design and costs are currently unknown but may be marginal when included as part of the City's pavement or other transportation capital projects.

Advanced &/or Localized weather forecasting

Consulting meteorologists can be hired to provide detailed local forecasts that may also be improved with locally installed monitoring stations. These can result in more accurate snow/ice event response decisions. These services are either contracted each season or annually (continuously) for approximately $6,000 or $10,000 annual costs, respectively.

Un-Likely or Not Currently Recommended

Alternative Anti-icing/De-icing solutions

While a liquid calcium chloride ($CaCl_2$) solution is currently used for anti-icing operations, sodium chloride (aka – brine; NaCl) and magnesium chloride ($MgCl_2$) are also available. The currently used $CaCl_2$ is

- More effective than NaCl attracting moisture and remaining on roadway surfaces,
- Locally used by the WSDOT's Everett maintenance yard and readily available for the City's purchase and use, and
- Has a lower effective temperature range (to -17 to -20°F)

$MgCl_2$ has similar performance to the currently used $CaCl_2$ but is less readily available and has a higher effective temperature range (to +5 to -4°F).

Agricultural-based deicer additives (e.g. beet juice, corn syrup, de-sugared molasses, cheese-production and beer brewing by-products) may be combined added to any of the de-icing liquids. These help to reduced metal corrosion, improve adherence to the pavement, provide longer effectiveness after plowing, and further lower freezing point of the liquid solutions. These additives typically do not significantly improve melting capabilities but are instead typically used for more efficient snow–pavement bonding prevention and faster activation of salts when used with a pre-wetting system. WSDOT and other Puget Sound

agencies have begun to use these additives and these operations and findings will be monitored for future consideration.

Alternative/Additional Plows & Blades

Several types of snow plow blades exist that provide more specialized types snow removal than the reversible front plow blades used by the City. Based on the typical relatively small number of snow event, these are unlikely to improve snow removal. Alternatives include:

- Wing plows – Attached to the side of plow vehicles to simultaneously plow adjacent travel lanes.
- V-plows – Front mounted and used to cut into very deep snow.
- Tow plows – Towed behind a plow vehicle to simultaneously plow adjacent travel lanes and apply sand and/or salt.
- Underbody/scraper – Installed underneath a plow vehicle to use vehicle weight for packed snow/ice removal.
- Steel plow cutting edge – This harder metal is typically used when compact snow frequently occurs on roadways (e.g. mountainous areas) to better cut/scrape along paved surfaces, and is more likely to damage the paved surface and pavement markings than carbide edges currently used.

Salt-only or Salt-slurry Application

The WSDOT has recently begun to apply only de-icing salt (or slurry) without sand since research has shown sand provides only temporary traction. Using sand results in street and stormwater utility system cleanup efforts in the weeks after snow events. Cleanup efforts don't capture the complete quantity of sand used and eventually accumulate in nearby waterways and negatively affect aquatic organisms.[4] These factors have led to WSDOT and others limiting sand use to only below 10-15°F when salt is less effective and traction improvement remains at least temporarily needed.

The potential benefits, costs, and risks of applying only salt currently appear uncertain and WSDOT's operations and findings will be monitored for future consideration. Factors to be considered in any future decision include:

- The cost of salt is typically $175 to $215 per ton (delivered). Sand typically is about $20 delivered.
- The relative quantity of sand/salt
    - For a 3:1 sand/salt mix applied 200 to 600 lbs. used per lane-mile
        - Up to 150 lbs. of salt are typically used per lane-mile.
        - Up to 450 lbs. of sand are typically used per lane-mile.
    - For salt only, up to 50 to 250 lbs. of salt are typically used per lane-mile.
        - See "Materials" page 5 regarding the maximum effectiveness of salt.

[4] Negative impacts include both direct physical contact/ blocking/ covering as well as increasing transporting of roadway chemicals (e.g. oil, tire-wear chemicals, etc.).

Appendix A. Typical Snow & Ice Response Materials Suppliers

2022-2023 Typical Material Suppliers

Sand

Reece – Aggregates and Recycling
5802 Cemetery Rd, Arlington WA 98223
Phone # (360) 403-7520

Smokey Point Concrete
23315 Dike Rd, Arlington WA 98223
Phone # (360) 856-0422

Road Salt

LTI Inc.
5600 W Marginal Way SW, Seattle WA 98106
Phone # 800-327-6255
Email – Saltorder@lynden.com

Liquid Anti-Icing Solution

Everett WSDOT Maintenance Facility
709 N Broadway Ave, Everett, WA 98201
Main Office # (425) 258-8300
William Anderson (425) 530-0977
AnderWm@wsdot.wa.gov

Appendix B. Snow & Ice Event Log Template

Snow & Ice Event Log – 20___-20___

Each event where ambient air temperature fall below 34°F between October 1st and May 1st the following year shall be recorded.

Event Number	Date & Time		Weather Summary	Response (Y/N)
	Begin	End		
2022-01 **example*	*10/31/22 12:00 PM*	*11/01/22 5:00 AM*	*34 deg. falling to 28 deg. low; cloudy & no precip. No reports of ice.*	*N*

Appendix C. Snow & Ice Response Summary Template

Snow or Ice Event Summary

*To be completed within 14 days after event operations end. Print to PDF/A on completion.

Event Number: [Type "Event Number" from Event Log.]

<table>
<tr><td></td><td>Response</td><td>Below 34°F</td></tr>
<tr><td>Begin</td><td>[date when decided to respond]</td><td>[date & approx. time at 34°↓]</td></tr>
<tr><td>End</td><td>[date when response ended]</td><td>[date & approx. time at 34°↑]</td></tr>
<tr><td colspan="3">Weather & Precipitation
[Describe temps., light cond., clouds, precip., & changes during event.]</td></tr>
<tr><td colspan="2">Equipment</td><td colspan="2">Materials</td></tr>
<tr><td>Total Used
[type & qty.]</td><td>Narrative
[Equip. detail or "None"]</td><td>Total Used
[qty. & type]</td><td>Narrative
[Mat. detail or "None"]</td></tr>
<tr><td colspan="4">Summary
[Type a narrative of key actions, decisions, staff, etc. Incl. dates/time as needed.]</td></tr>
<tr><td colspan="4">Challenges
[Type any or no challenges here.]</td></tr>
<tr><td colspan="4">Recommended Changes
[Recommend plan or response changes.]</td></tr>
<tr><td colspan="2">Follow-up Tasks
A. [add/delete add'l text]</td><td colspan="2">Prepared By
[Type staff name.]
Date Summary Completed: [date]</td></tr>
</table>

Appendix D. Snow Routes Priority Map

City of Marysville

Snow Routes

Snow Routes
- Snow Route Priority 1
- Snow Route Priority 2

De-Icing Areas
- Priority 1 De-Icing
- Priority 2 De-Icing
- De-icing

Maintenance Zones
- ZONE 1
- ZONE 2
- ZONE 3
- ZONE 4
- ZONE 5
- ZONE 6

- City of Marysville Urban Growth Area
- Tulalip Reservation
- Park
- City Boundary

N, W, E, S

0 0.25 0.5 1 Miles

EST. 1891 MARYSVILLE WASHINGTON

Scale: 1:18,000

Plotted: November 2022

PW22-27

Appendix E. City & Department Snow/Ice Emergency Phone Trees

**private phone numbers not published & not subject to Public Records Requests*